North Carolina Immunization Registry

HL7 - General Transfer Specification

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Introduction

The North Carolina Immunization Registry (NCIR) has made available an interactive user interface on the World Wide Web for authorized users to enter, query and update client immunization records. The Web interface makes NCIR information and functions available on desktops around the state. However, some immunization providers may wish to update their own information system (billing systems or EMR's) with the data entered in the NCIR and would like to do so without keying in the data twice. NCIR provides the data entered in the NCIR in electronic form (HL7 version 2.4) in both batch and in real time mode. This document details the Health Level Seven standard as it relates to immunization transactions.

The Health Level Seven (HL7) Standard

The ANSI HL7 standard is widely used for data exchange in the health care industry. The full standard is quite lengthy, covering a variety of situations in patient care and health care finance and no single application is likely to use all of its content. The CDC has worked with HL7 developers to create a set of messages that permit exchange of immunization data. This document covers the subset of HL7 that will be used for client and immunization records exchanged between NCIR and outside systems.

- The basic unit transmitted in an HL7 implementation is the **message**.
- Messages are made up of several **segments**, each of which is one line of text, beginning with a three-letter code identifying the segment type.
- Segments are in turn made up of several **fields** separated by a delimiter character, "|".

The details of how HL7 messages are put together, for NCIR purposes, will be explained later in this document. The example below shows the essentials of what a message looks like. In this example, a message is being sent on behalf of NCIR to a hypothetical organization named PHINMS. The message consists of multiple segments.

- The Message Header segment (**MSH**) identifies the owner (**NCIR**) of the information being sent and the receiver (**PHINMS**). It also identifies the message as being of type **VXU.** The VXU is an Unsolicited Vaccination Record Update, which is one of the message types defined by HL7.
- The Patient Identification segment (**PID**) gives the client's name (TESTF TESTL), birth date (20000101), in CCYYMMDD format), and other identifying fields.
- The Pharmacy Administration segment (**RXA**) tells that a Pneumo Conjugate 7 vaccine, with CPT code 90669 and CVX of 100, was administered on Jan 01, 2002. Many fields are optional and this example may have more information included in it. Some segments can be repeated within a single message.

```
MSH|^~\&|NCIR HL7 2.4^^|NCIR^^||PHINMS^^|20080328||VXU^V04|2008032808342800|P^|2.4^^|||ER
PID|||5993927^^^^SR^~PHIN123^^^^PI^||TESTL^TESTF^^^^^^|MOTHERPHINL^MOTHERPHINF^^^^^^|20000101|M|||^^^^^^^^NC001^^|NC00
1|^PN^^^^^^^|||||||||||||||
PD1||||||||||02^^^^^|Y||||A
NK1|1|PHINRESPL^PHINRESPF^^^^^^|MTH^MOTHER^HL70063^^^^^|123 Test street^^^NC^91918-
1234^^H^^^^|^PN^^^^123^4123123^^|||||||||||||||ENGLISH^^^^^
NK1|2|PHINSECRESPL^PHINSECRESPF^^^^^^|MTH^MOTHER^HL70063^^^^^|456 Phin
street^^Apex^NC^27502^^H^^^^|^PN^^^^345^6123413^^|||||||||||||||ENGLISH^^^^^
PV1||R|||||||||||||||||
RXA|0|999|20020101|20020101|100^PneumoConjugate 7^CVX^90669^PneumoConjugate7^CPT|999|||01^^^^^||^^^xyz org^^^^^^^^^^|||||||||CP
```

HL7 does not specify how messages are transmitted. It is flexible enough to be used for both real-time interaction and large batches. The standard defines file header and file trailer segments that are used when a number of messages are gathered into a batch for transmission as a file. NCIR will use batch files of messages to communicate with outside systems.

Scope of This Document

The General Transfer Specification (GTS) documented here supports automated exchange of data between the NCIR repository and outside systems. This allows both the client and immunization records to be available in both systems, so as to avoid the need to enter data twice. The remainder of this document specifies how HL7 file messages are constructed for the purposes of NCIR. It does not cover the methods that are used to transmit files between the NCIR central repository and outside systems. It covers only a small subset of the very extensive HL7 standard. Files of messages constructed from the guidelines in this document will fall within the HL7 standard, but there is a wide variety of other possible HL7 messages that are outside the scope of this document.

References

- See Version 2.1 (September, 2002) of the Health Level 7 standard for a full description of all messages, segments, and fields. Information regarding HL7 is at www.hl7.org.
- The National Immunization Program within the Center for Disease Control (www.cdc.gov/nip) has published an Implementation Guide for Immunization Data with the purpose of keeping the use of HL7 for immunization data as uniform as possible.

HL7 Message Types Used in NCIR Transmissions

NCIR uses VXU message type. The VXU is used for sending client data and immunizations. The tables below show the segments that are used to construct each message type. Each segment is one line of text ending with the carriage return character. The carriage return is needed so that the HL7 messages are readable and printable. The messages may appear somewhat cryptic due to the scarcity of white space. (The standard has provisions for inclusion of binary data, but NCIR will not use these features.) Square brackets [ ] enclose optional segments and curly braces {} enclose segments that can be repeated; thus, a VXU message type could be composed of just MSH, PID and RXA segments. Also, any number of NK1 segments could be included in the message. The full HL7 standard allows additional segments within these message types, but they are unused by NCIR. In order to remain compliant with HL7, their use will not result in an error, but the recipient can ignore the content of the message. The segments that are documented here are sufficient to support the principal NCIR functions of storing data about clients and immunizations.

VXU	Unsolicited Vaccination Record Update
MSH	Message Header
PID	Patient Identification
[PD1]	Patient Additional Demographic
[{NK1}]	Next of Kin / Associated Parties
[PV1]	Patient Visit
{RXA}	Pharmacy / Treatment Administration
[RXR]	Pharmacy / Treatment Route (Only one RXR per RXA segment)
[{OBX}]	Observation/Result*

Message Segments: Field Specifications and Usage

HL7 Segment Structure
Each segment consists of several fields that are separated by "|", which is the field separator character. The tables below define how each segment is structured and contain the following columns:

1. **SEQ** The ordinal position of the field in the segment. Since NCIR does not use all possible fields in the HL7 standard, these are not always consecutive.
2. **LEN** Maximum length of the field
3. **DT** HL7 data type of the field. See below for definition of HL7 data types.
4. **R/M** R means required by HL7, and M means mandatory for NCIR. Blank indicates an optional field.
5. **RP/#** Y means the field may be repeated any number of times, an integer gives the maximum number of repetitions, and a blank means no repetition is permitted.
6. **TBL#** Number of the table giving valid values for the field.
7. **ELEMENT NAME** HL7 name for the field.

- **HL7 data types.** Each field has an HL7 data type. Appendix A of this document lists and defines the HL7 data types needed for NCIR. The elemental data types Numeric (NM) and String (ST) consist of one value, while some data types, such as Extended Person Name (XPN) are composites.
- **Delimiter characters.** Field values of composite data types consist of several components separated by the **component separator**, "^". When components are further divided into sub-components, these are separated by the **sub-component separator**, "&". Some fields are defined to permit repetition separated by the **repetition character**, "~". When these special characters need to be included within text data, their special interpretations are prevented by preceding them with the **escape character**, "\".

```
MSH|^~\&| …..
XXX|field1|component1^component2^subcomponent3.1&subcomponent3.2^component4|  …..
YYY|repetition1~repetition2| …..
ZZZ|data includes escaped \|\~ special characters| …..
```

In the example above, the Message Header segment uses the field separator, "|", immediately after the "MSH" code that identifies the segment. This establishes what character serves as the field separator throughout the message. The next field, the four characters "^~\&", establishes, in order, the component separator character, the repetition character, the escape character, and the sub-component separator character that will apply throughout the message. The hypothetical "XXX" segment includes field1 with no internal structure, but the next field has several components separated by "^", and the third of these is made up of two sub-components separated by "&". The hypothetical "YYY" segment's first field permits repetition, in this example the two values "repetition1" and "repetition2". The hypothetical "ZZZ" segment's field has a text value that includes the characters "|~", and these are escaped to prevent their normal structural interpretation.

In NCIR, sub-components, repetition and text values requiring the escape character will be rare. Components within fields are common, since names and addresses are represented this way. HL7 permits the use of other delimiters besides the recommended ones and the delimiters used in each message are given in the Message Header segment. NCIR will always use the recommended delimiters when sending files.

The following rules are used by receiving systems to process HL7 messages.

- Treat data segments that are expected but not present as if all data fields in the segment were not present.
- Require use of HL7 recommended Field Separator |, and Encoding characters ^~\& for encoding messages.
- Ignore any data segment that is included but not expected, rather than treating it as an error. The HL7 message types used by NCIR may include many segments besides the ones in this document, and NCIR ignores them. NCIR will not send messages with segments not documented in this specification, but reserves the right to specify more segments at a later date. The rule to ignore unexpected segments facilitates this kind of change.
- Ignore data fields found but not expected within a segment.

The message segments below are needed to construct message types that are used by NCIR. Each segment is given a brief description excerpted from the HL7 standard. The tables define what fields make up each segment. Since NCIR does not use all the fields that HL7 defines, there are sometimes gaps in the ordinal sequence of fields. Following HL7 rules, the gaps do not diminish the number of field separators within the segment. For example, if the second and third fields in a segment are not present, their field separators remain in order to indicate that the next field present is the fourth: field1|||field4 .

MSH

The MSH segment defines the intent, source, destination and some specifics of the syntax of a message.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	1	ST	R			Field Separator
2	4	ST	R			Encoding Characters
3	180	HD				Sending Application
4	180	HD				Sending Facility
5	180	HD				Receiving Application
6	180	HD				Receiving Facility
7	26	TS				Date/Time Of Message
9	7	CM	R			Message Type
10	20	ST	R			Message Control ID
11	3	PT	R		0103	Processing ID
12	60	VID	R		0104	Version ID
15	2	ID			0155	Accept Acknowledgment Type

Field Notes:

MSH-1 Determines the field separator in effect for the rest of this message. NCIR requires the HL7 recommended field separator of "|".

MSH-2 Determines the component separator, repetition separator, escape character, and sub-component separator in effect for the rest of this message. NCIR requires the HL7 recommended values of ^~\&.

MSH-3 Name of the sending application. When sending, NCIR will use "NCIRHL7" followed by a software version number. This field is an optional convenience. See MSH-4 and MSH-6 for the fields principally used to identify sender and receiver of the message.

MSH-4 Identifies for whom the message is being sent (the owner of the message information). When sending, NCIR will use "NCIR".

MSH-6 Identifies the message receiver. When sending, NCIR will use the short Provider Organization name assigned when the provider first registers with the NCIR.

MSH-7 Date and time the message was created. NCIR ignores any time component. See the TS data type.

MSH-9 This is a required field. Two components of this field give the HL7 message type (see Table 0076) and the HL7 triggering event (see Table 0003). Within HL7, the triggering event is considered to be the real-world circumstance causing the message to be sent. For NCIR purposes, the value VXU^V04 will be plugged in to convey client and immunization information.

MSH-10 This is a required field. Message rejection will result if nothing is received in this field. The message control ID is a string (which may be a number) uniquely identifying the message among all those ever sent by the sending system. It is assigned by the sending system.

MSH-11 The processing ID to be used by NCIR is **P** for production processing. If this field is null, an informational message is generated indicating that NCIR is defaulting to **P**.

MSH-12 This is a required field. For the parser, the version number that is read in the first MSH segment, of the file, will be the version assumed for the whole file. For example, use a value of "2.3.1" to indicate HL7 Version 2.3.1or "2.4" to indicate HL7 Version 2.4. If there is no version number found in the first MSH segment, a hard error will occur and the file will not be processed.

MSH-15 This field controls whether an acknowledgement is generated for the message sent. NCIR suggests a value of ER to ask that acknowledgements be sent only for messages that cannot be processed normally. If the field is empty, NCIR will assume the value of ER.

PID

The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
3	20	CX	R	Y	0203	Patient ID (Internal ID)
5	48	XPN	R	Y		Patient Name
6	48	XPN		Y		Mother's Maiden Name
7	26	TS	M			Date/Time of Birth
8	1	IS			0001	Sex
10	80	CE		Y	0005	Race
11	106	XAD		Y		Patient Address
13	40	XTN				Phone number - home
19	16	ST				SSN Number – Patient
22	80	CE		Y	0189	Ethnic Group
24	1	ID			0136	Multiple Birth Indicator
25	2	NM				Birth Order
29	26	TS				Patient Death Date and Time

Field Notes:

PID-3 Sub-components 1 (ID) and 5 (identifier type code) are required in the PID-3 field. When NCIR is sending to an outside system, it will use the client's NCIR Client ID and/or chart number when available.

PID-5 See the XPN data type. Last name and first name are required in the first two components. If the Name Type Code component is included, use L-Legal. NCIR does not support repetition of this field.

PID-6 See the XPN data type. In this context, where the mother's name is used for client identification, NCIR uses only last name and first name. A mother's legal name might also appear in the context of an NK1 segment. NCIR does not support repetition of this field.

PID-7 Give the year, month, and day of birth (YYYYMMDD). NCIR ignores any time component.

PID-8 See Table 0001. Use F, M, or U.

PID-10 See Table 0005. NCIR stores and writes "Unknown" values as null. NCIR does not support repetition of this field.

PID-13 See the XTN data type. Version 2.4 includes the support of the N, X, B and C sequences. NCIR does not support repetition of this field. If PRN is specified in component 2 (telecommunication use code (ID) from table 0201) NCIR will use the 6th 7th 8th and 9th components for specification of area code, phone number, extension and text, respectively. Otherwise, NCIR will assume that the phone number is specified in the first component in the [NNN] [(999)]999-9999[X99999][B99999][C any text] format

PID-11 See the XAD data type. NCIR does not support repetition of this field.

PID-19 NOTE: Social security number is not displayed in screens or distributed to Provider Organizations. Support of PID-19 is for backwards compatibility only.

PID-22 See Table 0189. NCIR stores and writes "Unknown" values as null. NCIR supports repetition of this field.

PID-24 Use **Y** to indicate that the client was born in a multiple birth. This is not provided by the NCIR currently.

PID-25 Relevant when client was born in a multiple birth. Use 1 for the first born, 2 for the second, etc. This field is useful in matching client data to existing records.

PID-29 The date of death, if client is deceased. Give the year, month, and day (YYYYMMDD). NCIR ignores any time component.

PD1

The PD1 carries patient additional demographic information that is likely to change.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
11	80	CE			0215	Publicity Code
12	1	ID			0136	Protection Indicator
13	8	DT				Protection Indicator effective date
14	250	XON				Place of Worship
15	250	CE				Advance directive code
16	1	IS			0441	Immunization registry status
17	8	DT				Immunization registry status effective date
18	8	DT				Publicity Code effective date

Field Notes:

PD1-11 Controls whether recall/reminder notices are sent. Table 0215 provides the possible values. NCIR provided message contains 02 to indicate reminder/recall – Any method.

PD1-12 Controls visibility of records to other organizations. NCIR records are visible across organizations and this field is not populated.

PD1-13 Effective date for protection indicator reported in PD1-12. Format is YYYYMMDD.

PD1-16 Identifies the registry status of the patient. See table 0441.

PD1-17 Effective date for registry status reported in PD1-16. Format is YYYYMMDD.

PD1-18 Effective date for publicity code reported in PD1-11. Format is YYYYMMDD.

NK1

The NK1 segment contains information about the patient's other related parties. Any associated parties may be identified. Utilizing *NK1-1-set ID*, multiple NK1 segments can be sent to patient accounts.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	4	SI	R			Set ID - NK1
2	48	XPN		Y		Name
3	60	CE			0063	Relationship
4	106	XAD		Y		Address
5	40	XTN		Y		Phone Number
20	60	CE			0296	Primary language

Field Notes:

NK1-1 Sequential numbers. Use "1" for the first NK1 within the message, "2" for the second, and so forth. There is no requirement that the record for the same responsible person keep the same sequence number across multiple messages, in the case that information from the same record is transmitted more than once.

NK1-2 Name of the responsible person who cares for the client. See the XPN data type. NCIR does not support repetition of this field.

NK1-3 Relationship of the responsible person to the client. See data type CE and Table 0063 in the HL7 tables. Use the first three components of the CE data type, for example |MTH^Mother^HL70063|.

NK1-4 Responsible person's mailing address. See the XAD data type. NCIR does not support repetition of this field.

NK1-5 Responsible person's phone number. NCIR does not support repetition of this field. If PRN is specified in component 2 (telecommunication use code (ID) from table 0201) NCIR will use the 6th 7th 8th and 9th components for specification of area code, phone number, extension and text, respectively. Otherwise, NCIR will assume that the phone number is specified in the first component in the [NNN] [(999)]999-9999[X99999][B99999][C any text] format.

NK1-20 Primary language.

PV1

The PV1 segment is used to send visit-specific information.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
2	1	IS	R		0004	Patient Class
20	50	FC		Y	0064	Financial Class

***Field Notes**:*

PV1-2 See table 0004. NCIR will store and write a value of "R" (recurring patient) for this field.

PV1-20 See table 0064. NCIR provides codes to represent the different eligibility codes (Medicaid, American Indian etc) associated with the encounter date.

RXA

The RXA carries pharmacy administration data. It is a repeating segment and can record unlimited numbers of vaccinations.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	4	NM	R			Give Sub-ID Counter
2	4	NM	R			Administration Sub-ID Counter
3	26	TS	R			Date/Time Start of Administration
4	26	TS	R			Date/Time End of Administration
5	100	CE	R			Administered Code
6	20	NM	R			Administered Amount
7	60	CE				Administered Units
9	200	CE		Y	NIP001	Administration Notes
10	200	XCN		Y		Administering Provider
11	200	CM				Administered-at location
15	20	ST		Y		Substance Lot Number
17	60	CE		Y	0227	Substance Manufacturer Name
18	200	CE		Y	NIP002	Substance Refusal Reason
20	26	TS			0322	Completion status

Field Notes:

RXA-1 Required by HL7. Use "0" for NCIR.

RXA-2 Required by HL7. Use "999" for NCIR

RXA-3 Date the vaccine was given. NCIR ignores any time component.

RXA-4 Required by HL7. Date vaccine was given. Same as RXA-3 and time component ignored by NCIR.

RXA-5 This field identifies the vaccine administered. NCIR accepts the CVX code, CPT code, Vaccine Trade Name, or Vaccine Group Code for the vaccine administered. If using the CVX code, give the CVX code in the first component and "CVX" in the third component. If using the CPT code, the vaccine group code or vaccine trade name, use components four through six. For example, give the CPT code in the fourth component and "CPT" in the sixth component, |^^^90700^DtaP^CPT|. If using vaccine group code, use "**VGC**" as the name of the coding system. If using vaccine trade name, use "**VTN**" as the name of the coding system. See the CE data type and HL7 - Table 0292 (CVX Codes), NCIR – Table **CPT** (CPT Codes), NCIR – Table VGC (Vaccine Group Codes), and NCIR – Table **VTN** (Vaccine Trade Names).

RXA-6 Quantity of vaccine administered. Required by HL7.

Outbound:

- The NICR outbound data exchange will indicate the lot size for immunizations from NICR inventory. On a NCIR Outbound Data Exchange for oral typhoid the RXA-6 Administered Amount field will be 4 to indicate that number of capsules per blister pack.

- For historical immunizations, the administered amount is taken from the NCIR immunization record. If the administered amount on the immunization record is null, the field is defaulted to 999.

RXA-7 Units of vaccine administered (mL or caps). NCIR will store this value.

Outbound:

- NCIR Outbound Data Exchange for oral typhoid administered from NCIR vaccine inventory will be formatted as |CAP^blister pack^ISO+^^^| when the units are cap. All immunization from NCIR vaccine inventory from non capsules vaccine lots are formatted as milliliters. |ML^ ^ISO+^^^|.

- For historical immunizations, the administered units is taken from the NCIR immunization record.

RXA-9 NCIR will recognize 00 to indicate Administered Vaccine or 01 to indicate Historical Record. NCIR does not support repetition of this field.

RXA-10 Identifies the name of the person physically administering the vaccine (the vaccinator). NCIR will use components 2 – 7 to record the name and does not support repetition of this field.

RXA-11 NCIR will use this field to identify the facility where the vaccine was administered. Place the facility name in component 4.

RXA-15 Manufacturer's lot number for the vaccine. NCIR does not support repetition of this field.

RXA-17 Vaccine manufacturer from Table 0227, for example |AB^Abbott^ MVX^^^|. The HL7 2.4 specification recommends use of the external code set MVX. "When using this code system to identify vaccines, the coding system component of the CE field should be valued as "MVX" not as "HL70227." NCIR does not support repetition of this field.

RXA-18 When applicable, this field records the reason the patient refused the vaccine. See table NIP002. Any entry in this field indicates that the patient did not take the substance. The vaccine that was offered should be recorded in RXA-5, with the number 0 recorded for the dose number in RXA-2. Do not record contraindications, immunities or reactions in this field. NCIR does not support repetition of this field.

NOTE: NCIR only stores that a refusal of a vaccine occurred, not a specific type of refusal, so all outgoing refusals will default to "parental refusal" and will be returned in a separate VXU message.

RXA-20 This notes the completion code.

RXR

The Pharmacy/Treatment Route Segment contains the alternative combination of route and site.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	60	CE	R		0162	Route
2	60	CE			0163	Site

Field Notes:

RXR-1 This is the route of administration from table 0162.

RXR-2 This is the site of the route of administration from table 0163.

OBX

The Observation/Result Segment is used to transmit an observation.

SEQUENCE	LENGTH	DATA TYPE	R/M	RP/#	TABLE #	ELEMENT NAME
1	10	SI				Set ID-OBX
2	3	ID				Value type
3	80	CE	R			Observation Identifier
5	65536	CE	M	Y		Observation Value
11	1	ID	R		0085	Observation Result Status
14	26	TS				Date/Time of the observation

Field Notes:

OBX-1 Sequential numbers. Use "1" for the first OBX within the message, "2" for the second, and so forth.

OBX-2 Use CE for NCIR.

OBX-3 This field contains the unique identifier for the observation. LOINC code is used to indicate vaccine purchased with (public or privately funded vaccine), VIS date published, VIS date presented and contraindication. Examples include

OBX|1|CE|30963-3^^LN^^^||PBF^Public Funds^NIP008^^^|||||F|||200803120000

OBX|2|CE|29769-7^^LN^^^||200301010000^Date Vaccine Information Statement Presented^NIP003^^^||||||F|||200301010000

OBX|3|CE|29768-9^^LN^^^||200705170000^Date Vaccine Information Statement Published^NIP003^^^||||||F|||200301010000

When indicating a **Vaccination Contraindication/Precaution**, use 30945-0 in this field and enter a Contraindication, Precaution, or Immunity code (NIP004) in OBX-5.

Example: OBX|1|CE|30945-0^Contraindication^LN||21^acute illness^NIP^^^||||||F|

When indicating a **Reaction to Immunization**, use 31044-1 in this field and enter a Reaction code (NCIR001) in OBX-5.

Example: OBX|1|CE|31044-1^Reaction^LN||HYPOTON^hypotonic^NCIR^^^||||||F|

When indicating a **Vaccination Adverse Event Outcome**, use 30948-4 in this field and enter an Event Consequence code (NIP005) in OBX-5.

Example: OBX|1|CE|30948-4^Adverse Outcome^LN||E^er room^NIP^^^||||||F|

OBX-5 Text reporting Contraindication, Precaution, or Immunity (NIP004), Reaction (NCIR001), or Event Consequence (NIP005). NCIR has imposed a CE data type upon this field. The first component of which is required. (e.g., |`PERTCONT^Pertussis contra^NCIR^^^|`)

OBX-11 Required for HL7. Use “F” for NCIR.

OBX-14 Records the time of the observation. NCIR ignores any time component.

Batch Files of HL7 Messages

The definitions above tell how to create messages containing client and immunization data. Each message can logically stand on its own and HL7 is compatible with various methods of online and batch transmission. NCIR provides both batch and real time methods to receive HL7 messages from the NCIR. NCIR uses batch files to transmit many messages together. HL7 provides special header and footer segments to structure batch files. These segments are not part of any message, but serve to bracket the messages defined above. The structure of a batch file is as follows.

```
FHS                (file header segment)
{ BHS              (batch header segment)
 { [MSH              (zero or more HL7 messages)
    ....
    ....
    ....
] }
  BTS               (batch trailer segment)
}
FTS                (file trailer segment)
```

FHS – File Header Segment

The FHS segment is used to head a file (group of batches).

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	1	ST	R			File Field Separator
2	4	ST	R			File Encoding Characters
3	15	ST				File Sending Application
4	20	ST	M			File Sending Facility
6	20	ST				File Receiving Facility
7	26	TS	M			File Creation Date/Time
9	20	ST	M			File Name/ID
10	80	ST				File Header Comment
11	20	ST				File Control ID
12	20	ST				Reference File Control ID

Field Notes:

FHS-1 Same definition as the corresponding field in the MSH segment.
FHS-2 Same definition as the corresponding field in the MSH segment.
FHS-3 NCIR followed by version number ex. NCIR 7.2.3.
FHS-4 NCIR
FHS-7 Creation date
FHS-9 Name of the file as transmitted from the initiating system.
FHS-10 Free text, which may be included for convenience, but has no effect on processing.
FHS-11 This field is used to identify a particular file uniquely among all files sent from the sending facility identified in FHS-4.
FHS-12 Contains the value of FHS-11-file control ID when this file was originally transmitted. Not present if this file is being transmitted for the first time.

FTS - File Trailer Segment

The FTS segment defines the end of a file.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	10	NM	M			File Batch Count
2	80	ST				File Trailer Comment

Field Notes:

FTS-1 The number of batches contained in this file. NCIR normally sends one batch per file and discourages sending multiple batches per file.

FTS-2 Free text, which may be included for convenience, but has no effect on processing.

BHS - Batch Header Segment

The BHS segment defines the start of a batch.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	1	ST	R			Batch Field Separator
2	4	ST	R			Batch Encoding Characters
3	15	ST				Batch Sending Application
4	20	ST	M			Batch Sending Facility
6	20	ST				Batch Receiving Facility
7	26	TS	M			Batch Creation Date/Time
10	80	ST				Batch Comment
11	20	ST				Batch Control ID
12	20	ST				Reference Batch Control ID

Field Notes:

BHS-1 This field contains the separator between the segment ID and the first real field, *BHS-2-batch encoding characters*. As such it serves as the separator and defines the character to be used as a separator for the rest of the segment. NCIR requires | (ASCII 124).

BHS-2 This field contains the four characters in the following order: the component separator, repetition separator, escape characters and sub-component separator. NCIR requires ^~\&, (ASCII 94, 126, 92 and 38 respectively).

BHS-3 NCIR followed by version number.

BHS-4 NCIR

BHS-7 Creation date

BHS-10 Free text, which may be included for convenience, but has no effect on processing.

BHS-11 This field is used to uniquely identify a particular batch. NCIR uses one batch per file.

BHS-12 This field contains the value of *BHS-11-batch control ID* when this batch was originally transmitted. Not present if this batch is being sent for the first time. See definition for *BHS-11-batch control ID*.

BTS - Batch Trailer Segment

The BTS segment defines the end of a batch.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	10	ST	M			Batch Message Count
2	80	ST				Batch Comment

Field Notes:

BTS-1 This field contains the count of the individual messages contained within the batch.

BTS-2 Free text, which can be included for convenience, has no effect on processing.

Appendix A -- HL7 Data Types

The following descriptions of HL7 data types are excerpted or adapted from the HL7 standard. See the field notes within each segment definition above on how to use data types in particular fields. Some data types have complex definitions much of which do not apply to NCIR usage, and for these we omit much of the HL7 definition of the data type, referring instead to the field notes in the segment definitions.

CE – Coded Element

```
Components:  <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate
             text (ST)> ^ <name of alternate coding system (ST)>
```

Example:

```
|F-11380^CREATININE^I9^2148-5^CREATININE^LN|
```

This data type transmits codes and the text associated with the code. To allow all six components of a CE data type to be valued, the maximum length of this data type must be at least 60.

Identifier (ST)

Sequence of characters (the code) that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.

Text (ST)

Name or description of the item in question. E.g., myocardial infarction or X-ray impression. Its data type is string (ST).

Name of coding system (ST)

Each coding system is assigned a unique identifier. This component will serve to identify the coding scheme being used in the identifier component. The combination of the **identifier** and **name of coding system** components will be a unique code for a data item. Each system has a unique identifier. ASTM E1238-94, Diagnostic, procedure, observation, drug ID, and health outcomes coding systems are identified in the tables in Section 7.1.4 [of the full HL7 standard], "Coding schemes." Others may be added as needed. When an HL7 table is used for a CE data type, the ***name of coding system*** component is defined as ***HL7nnnn*** where ***nnnn*** is the HL7 table number.

Alternate components

These three components are defined analogously to the above for the alternate or local coding system. If the Alternate Text component is absent, and the Alternate Identifier is present, the Alternate Text will be taken to be the same as the Text component. If the Alternate Coding System component is absent, it will be taken to mean the locally defined system.

Note:	The presence of two sets of equivalent codes in this data type is semantically different from a repetition of a CE-type field. With repetition, several distinct codes (with distinct meanings) may be transmitted.

Note:	For HL7-defined tables which have not been adopted from some existing standard, the third component, "name of coding system," is constructed by appending the table number to the string "HL7." Thus, the field *RXR-2-site*, is a CE data type which refers to HL7 table number 0163. Its "name of coding system" component is "HL70163".

CM - Composite

A field that is a combination of other meaningful data fields. Each portion is called a **component**. The specific components of CM fields are defined within the field descriptions. Certain other composites have been separately identified and are described below. ***The CM data type is maintained strictly for backward compatibility and may not be used for the definition of new fields.*** Wherever a component of an HL7 field is itself an HL7 data type which contains components, its delimiters are demoted by one. Thus a component designated as a CE data type should be encoded as `<identifier & text & name of coding system>` (see data type CE – Coded Element). Note that since HL7 delimiters are not recursive, an HL7 data type containing components cannot be a sub-component. When this level of detail is needed, each component of the HL7 data type can be

encoded as a separate sub-component. For an example of this, see the encoding of the filler order number in the order-sequencing component of the Timing/Quantity data type.

CX – Extended Composite ID With Check Digit
NCIR uses this data type only for client identification in Patient Identification (PID) segments. See the field notes for values used for NCIR.

HD – Hierarchic Designator
NCIR uses this data type only to identify sender and receiver in Message Header (MSH) segments. See the field notes for values used for NCIR.

ID – Coded Value for HL7 Defined Tables

The value of such a field follows the formatting rules for a ST field except that it is drawn from a table of legal values. There shall be an HL7 table number associated with ID data types. Examples of ID fields include religion and sex. This data type should be used only for HL7 tables. The reverse is not true, since in some circumstances it is more appropriate to use the CE data type for HL7 tables.

IS – Coded Value for User Defined Tables

The value of such a field follows the formatting rules for a ST field except that it is drawn from a site-defined (or user-defined) table of legal values. There shall be an HL7 table number associated with IS data types. An example of an IS field is the *Event reason code* defined in Section 3.3.1.4 [of the full HL7 standard], "Event reason code." This data type should be used only for user-defined tables. The reverse is not true, since in some circumstances, it is more appropriate to use the CE data type for user-defined tables.

NM – Numeric

A number represented as a series of ASCII numeric characters consisting of an optional leading sign (+ or -), the digits and an optional decimal point. In the absence of a sign, the number is assumed to be positive. If there is no decimal point the number is assumed to be an integer. Examples:

```
|999|
|-123.792|
```

Leading zeros, or trailing zeros after a decimal point, are not significant. For example, the following two values with different representations, "01.20" and "1.2", are identical. Except for the optional leading sign (+ or -) and the optional decimal point (.), no non-numeric ASCII characters are allowed. Thus, the value <12 should be encoded as a structured numeric (SN) (preferred) or as a string (ST) (allowed, but not preferred) data type.

SI – Sequence ID

A non-negative integer in the form of a NM field. See the field notes in segments using this data type for specifications of SI fields.

ST – String Data

String data is left justified with trailing blanks optional. Any displayable (printable) ACSII characters (hexadecimal values between 20 and 7E, inclusive, or ASCII decimal values between 32 and 126), except the defined delimiter characters. Example:

```
|almost any data at all|
```

To include any HL7 delimiter character (except the segment terminator) within a string data field, use the appropriate HL7 escape sequence.

Usage note: the ST data type is intended for short strings (e.g., less than 200 characters). For longer strings the TX or FT data types should be used.

TS – Time Stamp

```
Format:  YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>
```

Contains the exact time of an event, including the date and time. The date portion of a time stamp follows the rules of a date field and the time portion follows the rules of a time field. The specific data representations used in the HL7 encoding rules are compatible with ISO 8824-1987(E).

In prior versions of HL7, an optional second component indicates the degree of precision of the time stamp (Y = year, L = month, D = day, H = hour, M = minute, S = second). This optional second component is retained only for purposes of backward compatibility.

By site-specific agreement, YYYYMMDD[HHMM[SS[.S[S[S[S]]]]][+/-ZZZZ]^<degree of precision> may be used where backward compatibility must be maintained.

In the current and future versions of HL7, the precision is indicated by limiting the number of digits used, unless the optional second component is present. Thus, YYYY is used to specify a precision of "year," YYYYMM specifies a precision of "month," YYYYMMDD specifies a precision of "day," YYYYMMDDHH is used to specify a precision of "hour," YYYYMMDDHHMM is used to specify a precision of "minute," YYYYMMDDHHMMSS is used to specify a precision of seconds, and YYYYMMDDHHMMSS.SSSS is used to specify a precision of ten thousandths of a second. In each of these cases, the time zone is an optional component. Maximum length of the time stamp is 26. Examples:

```
|19760704010159-0600|   1:01:59 on July 4, 1976 in the Eastern
                      Standard Time zone.

|19760704010159-0500|   1:01:59 on July 4, 1976 in the Eastern
                      Daylight Saving Time zone.

|198807050000|          Midnight of the night extending from July 4 to
                      July 5, 1988 in the local time zone of the sender.

|19880705|              Same as prior example, but precision extends
                      only to the day.  Could be used for a
                      birthdate, if the time of birth is unknown.
```

The HL7 Standard strongly recommends that all systems routinely send the time zone offset but does not require it. All HL7 systems are required to accept the time zone offset, but its implementation is application specific. For many applications the time of interest is the local time of the sender. For example, an application in the Eastern Standard Time zone receiving notification of an admission that takes place at 11:00 PM in San Francisco on December 11 would prefer to treat the admission as having occurred on December 11 rather than advancing the date to December 12.

One exception to this rule would be a clinical system that processed patient data collected in a clinic and a nearby hospital that happens to be in a different time zone. Such applications may choose to convert the data to a common representation. Similar concerns apply to the transitions to and from daylight saving time. HL7 supports such requirements by requiring that the time zone information be present when the information is sent. It does not, however, specify which of the treatments discussed here will be applied by the receiving system.

XAD – Address

```
Components:  <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^
             <zip or postal code(ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic
             designation (ST)>^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation
             code (ID)>
```

Example:

```
|1234 Easy St.^Ste. 123^San Francisco^CA^95123^USA^B^^SF^^|
```

Street address (ST)

The street or mailing address of a person or institution.

Other designation (ST)

Second line of address. In general, it qualifies address. Examples: Suite 555 or Fourth Floor.

City (ST)

State or province (ST)

State or province should be represented by the official postal service codes for that country.

Zip or postal code (ST)

Zip or postal codes should be represented by the official codes for that country. In the US, the zip code takes the form 99999[-9999], while the Canadian postal code takes the form A9A-9A9.

Country (ID)

Defines the country of the address. See Table 0212.

Address type (ID)

Address type is optional.

Other geographic designation (ST)

Other geographic designation includes country, bioregion, SMSA, etc.

County/parish code (IS)

A code that represents the county in which the specified address resides. Refer to *user-defined table 0289 - County/parish*. When this component is used to represent the county (or parish), component 8 "other geographic designation" should not duplicate it (i.e., the use of "other geographic designation" to represent the county is allowed only for the purpose of backward compatibility, and should be discouraged in this and future versions of HL7).

Census tract (IS)

An optional code that represents the census track in which the specified address resides. NCIR does not store this value.

XCN – Extended Composite ID Number and Name For Persons

NCIR uses this data type only to identify Provider Organizations that administer immunizations. See the field notes for segment RXA.

XPN – Extended Person Name

```
Components:  <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name
             (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^
             <name type code (ID) > ^ <name representation code (ID)>
```

Example:

```
|Smith&St^John^J^III^DR^PHD^L|
```

Family name (ST)

Last Name Prefix (ST)

Given name (ST)

Middle initial or name (ST)

Suffix (ST)

Used to specify a name suffix (e.g., Jr. or III).

Prefix (ST)

Used to specify a name prefix (e.g., Dr.).

Degree (ST)

Used to specify an educational degree (e.g., MD).

Name type code (ID)

A code that represents the type of name. Refer to *HL7 table 0200 - Name type* for valid values.

Table 0200 - Name type

Value	Description
A	Alias Name
L	Legal Name
D	Display Name
M	Maiden Name
C	Adopted Name

Note:	The legal name is the same as the current married name.

Name representation code (ID)

This component can be used when names are represented in ideographic or non-alphabetic systems. NCIR ignores this component.

XTN – Extended Telecommunication Number

```
Components:  [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^
             <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^
             <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>
```

Example:

```
(415)555-3210^ORN^FX^
```

[(999)] 999-9999 [X99999] [C any text]

Defined as the TN data type, except that the length of the country access code has been increased to three.

Telecommunication use code (ID)

A code that represents a specific use of a telecommunication number. Refer *to HL7 table 0201 - Telecommunication use code* for valid values.

Table 0201 - Telecommunication use code

Value	Description
PRN	Primary Residence Number
ORN	Other Residence Number
WPN	Work Number
VHN	Vacation Home Number
ASN	Answering Service Number
EMR	Emergency Number
NET	Network (email) Address
BPN	Beeper Number

Telecommunication equipment type (ID)

A code that represents the type of telecommunication equipment. Refer *to HL7 table 0202 - Telecommunication equipment type* for valid values.

Table 0202 - Telecommunication equipment type

Value	Description
PH	Telephone
FX	Fax
MD	Modem
CP	Cellular Phone
BP	Beeper
Internet	Internet Address: Use Only If Telecommunication Use Code Is NET
X.400	X.400 email address: Use Only If Telecommunication Use Code Is NET

Email address (ST)

Country code (NM)

Area/city code (NM)

Phone number (NM)

Extension (NM)

Any text (ST)

Appendix B -- HL7 Tables

The following tables give valid values for fields in the segments defined above, in the cases where the field definitions reference an HL7 table number. The tables are considered to be part of the HL7 standard, but those tables designated as type User have values determined by NCIR.

Type	Table	Name	Value	Description
HL7	0001	Sex		
	0001		F	Female
	0001		M	Male
	0001		U	Unknown
HL7	0003	Event Type		
	0003		A31	ADT/ACK - Update patient information
	0003		V04	VXU - Unsolicited vaccination record update
HL7	0004	Patient class		
	0004		E	Emergency
	0004		I	Inpatient
	0004		O	Outpatient
	0004		P	Preadmit
	0004		R	Recurring
	0004		B	Obstetrics
HL7	0005	Race		
	0005	1002-5	I	American Indian or Alaska Native
	0005	2028-9	A	Asian
	0005	2076-8	**N**	Native Hawaiian or Other Pacific Islander
	0005	2054-5	B	Black or African-American
	0005	2106-3	W	White
	0005	2131-1	O	Other Race
	0005	Null	U	Unknown
HL7	0008	Acknowledgment Code		
	0008		AA	Application Accept
	0008		AE	Application Error
	0008		AR	Application Reject
User	0063	Relationship		
	0063		EXF	Aunt
	0063		BRO	Brother
	0063		FTH	Father
	0063		PAR	Foster Father
	0063		PAR	Foster Mother
	0063		GRD	Guardian
	0063		GRP	Grandfather
	0063		GRP	Grandmother
	0063		MTH	Mother
	0063		SEL	Self
	0063		SIS	Sister
	0063		EXF	Spouse
	0063		PAR	Stepfather
	0063		PAR	Stepmother
	0063		EXF	Uncle
	0063		UNK	Unknown
HL7	0064	Financial class		
	0064	V00	Blank	VFC eligibility not determined/unknown
	0064	V02	M – Medicaid	VFC eligible – Medicaid/Medicaid Managed Care
	0064	V03	N – Not Insured	VFC eligible – Uninsured
	0064	V04	A -American Indian/Alaskan Native	VFC eligible – American Indian/Alaskan Native
	0064	V05	U- Underinsured (Yes – FQHC/RHC)	VFC eligible – Federally Qualified Health Center Patient (under-insured)
		CH01	H – North Carolina Health	S-CHIP coverage-separate from Medicaid-not VFC

Type	Table	Name	Value	Description
			Choice	eligible
		IS00	I – Insured	Some or all vaccine costs covered
		IS01	U –Underinsured (No – FQHC/RHC)	Underinsured (no vaccine costs covered and not FQHC/RHC
		NC01	R – Refusal to give information	Refused to provide eligibility data
		NC02	Title X Uninsured Unaccompanied minor	VFC eligible
HL7	0076	Message Type		
	0076		ACK	General acknowledgment message
	0076		ADR	ADT response
	0076		ADT	ADT message
	0076		QCK	Query general acknowledgment
	0076		VXQ	Query for vaccination record
	0076		VXX	Vaccination query response with multiple PID matches
	0076		VXR	Vaccination query record response
	0076		VXU	Unsolicited vaccination record update
	0076		ORU	Unsolicited observation results
HL7	0085	Observation result status codes		
	0085		O	Order detail description only
HL7	0103	Processing ID		
	0103		P	Production
HL7	0104	Version ID		
	0104		5.0.0	Release 5.0.0 2005
HL7	0136	Yes/No Indicator		
	0136		Y	Yes
	0136		N	No
HL7	0155	Accept/Application Acknowledgment Conditions		
	0155		ER	Error/reject conditions only
HL7	0162	Route of Administration		
	0162		ID	Intradermal
	0162		IM	Intramuscular
	0162		IN	Intranasal
	0162		IV	Intravenous
	0162		PO	Oral
	0162		SC	Subcutaneous
	0162		TD	Transdermal
	0162		MP	Multiple Puncture
HL7	0163	Administrative Site		
	0163		LT	Left Thigh
	0163		LA	Left Arm
	0163		LD	Left Deltoid
	0163		LG	Left Gluteous Medius
	0163		LVL	Left Vastus Lateralis
	0163		LLFA	Left Lower Forearm
	0163		LN	Left Naris
	0163		RA	Right Arm
	0163		RT	Right Thigh
	0163		RVL	Right Vastus Lateralis
	0163		RG	Right Gluteous Medius
	0163		RD	Right Deltoid
	O163		RLFA	Right Lower Forearm
	0163		RN	Right Naris

Type	Table	Name	Value	Description
	0163		MOU	Mouth
	0163		BN	Bilateral Nares
HL7	0189	Ethnic Group		
	0189	2135-2	H	Hispanic
	0189	2186-5	N	Non-Hispanic
	0189	Null	U	Unknown
HL7	0203	Identifier Type		
			BR	Birth Registry Number
			MA	Medicaid Number
			MC	Medicare Number
			PI	Patient Internal Identifier
			PN	Person Number
			PRN	Provider Number
			PT	Patient External Identifer
			SR	State Registry Identifier
			SS	Social Security Number
User	0212	Nationality		
	0212		CA	Canada
	0212		US	United States of America
User	0215	Publicity Code		
	0215		01	No reminder/recall
	0215		02	Yes reminder/recall – any method
HL7	0227	Manufacturers of vaccines (code = MVX)		
	0227		AB	Abbott
	0227		AD	Adams
	0227		ALP	Alpha
	0227		AR	Armour (**Inactive** – use CEN)
	0227		AVB	Aventis Behring
	0227		AVI	Aviron
	0227		BA	Baxter (**Inactive** - use BAH)
	0227		BAH	Baxter Health Care
	0227		BAY	Bayer
	0227		BP	Berna **(Inactive** – use BPC)
	0227		BPC	Berna Products Corporation
	0227		CEN	Centeon L.L.C. (**Inactive** – use AVB)
	0227		CHI	Chiron Corporation
	0227		CMP	Celltech Medeva Pahm (**Inactive** – use PWJ)
	0227		CNJ	Cangene Corporation
	0227		CON	Connaught **(Inactive** – use PMC)
	0227		DVC	DynPort Vaccine Company, LLC
	0227		EVN	Evans (**Inactive** – use PWJ)
	0227		GEO	GeoVax Labs, Inc
	0227		GRE	Greer
	0227		IAG	Immuno International AG (**Inactive** – use BAH)
	0227		IM	Merieux (**Inactive** – Use PMC)
	0227		IUS	Immuno-US
	0227		JPN	The Research foundation for Microbial Diseases of Osaka U.
	0227		KGC	Korea Green Cross
	0227		LED	Lederle (**Inactive** – use WAL)
	0227		MA	Massachusetts Public Health (**Inactive**-Use MBL)
	0227		MBL	Massachusetts Biologic Laboratories
	0227		MED	MedImmune
	0227		MIL	Miles (**Inactive** – use BAY)

Type	Table	Name	Value	Description
	0227		MIP	BioPort
	0227		MSD	Merck
	0227		NAB	North American Biologicals, Inc.
	0227		NAV	North American Vaccine (**Inactive** – use BAH)
	0227		NVX	Novavax, Inc
	0227		NYB	New York Blood Center
	0227		NOV	Novartis
	0227		OTC	Organon Teknika
	0227		ORT	Ortho
	0227		PD	Parkdale Pharmaceuticals (formerly Parke Davis)
	0227		PMC	Sanofi Pasteur (formely Aventis Pasteur Inc. (formerly Pasteur Merieux Connaught)
	0227		PRX	Praxis Biologics (**Inactive** – use WAL)
	0227		PWJ	Powderject Pharmaceutical
	0227		SA	United States Army Medical Research
	0227		SCL	Sclavo
	0227		SKB	GlaxoSmithKline
	0227		SI	Swiss Serum and Vaccine Inst. (**Inactive** – use BPC)
	0227		SOL	Solvay Pharmaceuticals
	0227		TAL	Talecris Biotherapeutics (includes Bayer Biologicals)
	0227		USA	United States Army Medical Research
	0227		WA	Wyeth-Ayerst (**Inactive** – use WAL)
	0227		WAL	Wyeth-Ayerst
	0227		OTH	Other
	0227		UNK	Unknown manufacturer
	0227		VXG	VaxGen
	0227		ZLB	ZLB Behring (includes Aventis Behring and Armour Pharmaceutical Company
User	0289	County/parish (North Carolina only)		
	0289		NC001	Alamance
	0289		NC003	Alexander
	0289		NC005	Alleghany
	0289		NC007	Anson
	0289		NC009	Ashe
	0289		NC011	Avery
	0289		NC013	Beaufort
	0289		NC015	Bertie
	0289		NC017	Bladen
	0289		NC019	Brunswick
	0289		NC021	Buncombe
	0289		NC023	Burke
	0289		NC025	Cabarrus
	0289		NC027	Caldwell
	0289		NC029	Camden
	0289		NC031	Carteret
	0289		NC033	Caswell
	0289		NC035	Catawba
	0289		NC037	Chatham
	0289		NC039	Cherokee
	0289		NC041	Chowan
	0289		NC043	Clay
	0289		NC045	Cleveland
	0289		NC047	Columbus
	0289		NC049	Craven

Type	Table	Name	Value	Description
	0289		NC051	Cumberland
	0289		NC053	Currituck
	0289		NC055	Dare
	0289		NC057	Davidson
	0289		NC059	Davie
	0289		NC061	Duplin
	0289		NC063	Durham
	0289		NC065	Edgecombe
	0289		NC067	Forsyth
	0289		NC069	Franklin
	0289		NC071	Gaston
	0289		NC073	Gates
	0289		NC075	Graham
	0289		NC077	Granville
	0289		NC079	Greene
	0289		NC081	Guilford
	0289		NC083	Halifax
	0289		NC085	Harnett
	0289		NC087	Haywood
	0289		NC089	Henderson
	0289		NC091	Hertford
	0289		NC093	Hoke
	0289		NC095	Hyde
	0289		NC097	Iredell
	0289		NC099	Jackson
	0289		NC101	Johnston
	0289		NC103	Jones
	0289		NC105	Lee
	0289		NC107	Lenoir
	0289		NC109	Lincoln
	0289		NC111	McDowell
	0289		NC113	Macon
	0289		NC115	Madison
	0289		NC117	Martin
	0289		NC119	Mecklenburg
	0289		NC121	Mitchell
	0289		NC123	Montgomery
	0289		NC125	Moore
	0289		NC127	Nash
	0289		NC129	New Hanover
	0289		NC131	Northampton
	0289		NC133	Onslow
	0289		NC135	Orange
	0289		NC137	Pamlico
	0289		NC139	Pasquotank
	0289		NC141	Pender
	0289		NC143	Perquimans
	0289		NC145	Person
	0289		NC147	Pitt
	0289		NC149	Polk
	0289		NC151	Randolph
	0289		NC153	Richmond
	0289		NC155	Robeson
	0289		NC157	Rockingham

Type	Table	Name	Value	Description
	0289		NC159	Rowan
	0289		NC161	Rutherford
	0289		NC163	Sampson
	0289		NC165	Scotland
	0289		NC167	Stanly
	0289		NC169	Stokes
	0289		NC171	Surry
	0289		NC173	Swain
	0289		NC175	Transylvania
	0289		NC177	Tyrrell
	0289		NC179	Union
	0289		NC181	Vance
	0289		NC183	Wake
	0289		NC185	Warren
	0289		NC187	Washington
	0289		NC189	Watauga
	0289		NC191	Wayne
	0289		NC193	Wilkes
	0289		NC195	Wilson
	0289		NC197	Yadkin
	0289		NC199	Yancey
HL7	0292	Vaccines Administered (CVX Codes)		
	0292		54	Adenovirus, type 4
	0292		55	Adenovirus, type 7
	0292		82	Adeno, Unspecified
	0292		24	Anthrax
	0292		19	BCG
	0292		26	Cholera
	0292		28	DT (pediatric)
	0292		20	DTaP
	0292		106	DTaP, 5 pertussis antigen
	0292		107	DTap, Unspecified
	0292		110	DTaP-HepB-Polio
	0292		50	DTaP-Hib
	0292		01	DTP
	0292		22	DTP-Hib
	0292		111	FLU - Nasal
	0292		16	FLU whole cell
	0292		15	FLU split cell
	0292		88	FLU-Deleted
	0292		85	Hep A, Unspecified
	0292		83	Hep A, ped/adol, 2 dose
	0292		84	Hep A, ped/adol, 3 dose
	0292		08	Hep B, adolescent or pediatric
	0292		42	Hep B, adolescent/high risk infant
	0292		43	Hep B, adult
	0292		44	Hep B, dialysis
	0292		45	Hep B, Unspecified
	0292		52	HepA, adult
	0292		104	HepA-HepB
	0292		47	Hib (HbOC)
	0292		46	Hib (PRP-D)
	0292		49	Hib (PRP-OMP)

Type	Table	Name	Value	Description
	0292		48	Hib (PRP-T)
	0292		17	Hib, Unspecified
	0292		51	Hib-Hep B
	0292		62	HPV, quadrivalent
	0292		10	IPV
	0292		39	Japanese encephalitis
	0292		66	Lyme
	0292		04	Measeles-Rubella
	0292		05	Measles
	0292		103	Meningococcal C conjugate
	0292		32	Meningococcal polysaccharide MPSV4
	0292		108	Meningococcal, Unspecified
	0292		114	Meningococcal conjugate MCV4
	0292		03	MMR
	0292		94	MMRV
	0292		07	Mumps
	0292		02	OPV
	0292		23	Plague
	0292		100	Pneumococcal Conjugate 7
	0292		109	Pneumococcal, Unspecified
	0292		33	Pneumococcal Polysaccharide 23
	0292		89	Polio, Unspecified
	0292		18	Rabies- IM
	0292		90	Rabies, NOS
	0292		40	Rabies-ID
	0292		74	Rotavirus, tetravalent
	0292		116	Rotavirus, pentavalent
	0292		122	Rotavirus, Unspecified
	0292		06	Rubella
	0292		38	Rubella-Mumps
	0292		75	Smallpox
	0292		09	TD (adult)
	0292		113	Td adult preservative free
	0292		115	Tdap
	0292		35	Tetanus
	0292		112	Tetanus-Unspecified
	0292		53	Typhoid- AKD
	0292		25	Typhoid- oral
	0292		91	Typhoid, NOS
	0292		41	Typhoid-HP
	0292		101	Typhoid-ViCPs
	0292		105	Vaccinia (smallpox), diluted
	0292		21	Varicella
	0292		37	Yellow fever
	0292		121	Zoster vaccine. live
NIP	NIP001	Immunization Information Source		
	NIP001		00	New Immunization Record
	NIP001		01	Historical Information
NIP	NIP002	Substance Refusal Reason		
	NIP002		00	Parent Refusal
	NIP002		01	Religious Exemption
NIP	NIP004	Contraindications, Precautions		
	NIP004		01	Recipient condition - unspecified
	NIP004		02	Household condition - unspecified

Type	Table	Name	Value	Description
	NIP004		03	Allergy to baker's yeast (anaphylactic)
	NIP004		04	Allergy to egg ingestion (anaphylactic)
	NIP004		05	Allergy to gelatin (anaphylactic)
	NIP004		06	Allergy to neomycin (anaphylactic)
	NIP004		07	Allergy to Streptomycin (anaphylactic)
	NIP004		08	Allergy to Thimerosal – refer to package insert (anaphylactic)
	NIP004		09	Allergy to previous dose of this vaccine or to any of its unlisted vaccine components (anaphylactic)
	NIP004		10	Anaphylactic (life-threatening) reaction of previous dose of this vaccine or any of its components
	NIP004		11	Collapse or shock like state within 48 hours of previous dose of DTP/DTaP
	NIP004		12	Convulsions (fits, seizures) within 3 days of previous dose of DTP/DTaP
	NIP004		13	Persistent, inconsolable crying lasting 3 hours within 48 hours of previous dose of DTP/DTaP
	NIP004		14	Current diarrhea, moderate to severe
	NIP004		15	Encephalopathy within 7 days of previous dose of DTP or DTaP
	NIP004		16	Current fever with moderate-to-severe illness
	NIP004		17	Fever ≥ 40.5° C (105° F) within 48 hours of previous dose of DTP/DTaP
	NIP004		18	Guillain-Barre Syndrome (GBS) within 6 weeks after DTP/DTaP
	NIP004		21	Current acute illness, moderate to severe (with or without fever)
	NIP004		22	Chronic illness
	NIP004		23	Recent or simultaneous administration of an antibody-containing blood product (immune globulin)
	NIP004		27	Immunity: Measles protective antibody titer serologically proven
	NIP004		28	Immunity: Mumps
	NIP004		31	Immunity: Rubella
	NIP004		33	Immunity: Varicella Laboratory – tested or history of varicella disease (Chicken pox)
	NIP004		36	Immunodeficiency due to any cause
	NIP004		37	Unstable neurologic disorder, until neurological status clarified and stabilized
	NIP004		38	Otitis media (ear infection) moderate to severe (with or without fever)
	NIP004		39	Pregnancy (in recipient) – refer to CDC guidelines for vaccinating pregnant women
	NIP004		40	Thrombocytopenia
	NIP004		41	Thrombocytopenia purpura (history)
	NIP004		42	Household contact of infant < 6 months [CDC code does not have a value assigned.]
	NIP004		43	High risk condition for influenza [* - CDC code does not have a value assigned.]

Type	Table	Name	Value	Description
	NIP004		ME01	State approved medical exemption for DTP/aP vaccine group
	NIP004		ME02	State approved medical exemption for Pediatric DT vaccine
	NIP004		ME03	State approved medical exemption for Hepatitis B vaccine group
	NIP004		ME04	State approved medical exemption for Hib vaccine group
	NIP004		ME05	State approved medical exemption for MMR vaccine group
	NIP004		ME06	State approved medical exemption for Polio vaccine group
	NIP004		ME07	State approved medical exemption for Adult Td vaccine group
	NIP004		ME08	State approved medical exemption for Varicella vaccine group
	NIP004		P1	Parent Refusal of DT
	NIP004		P2	Parent Refusal of DTaP
	NIP004		P3	Parent Refusal of HepB
	NIP004		P4	Parent Refusal of Hib
	NIP004		P5	Parent Refusal of MMR
	NIP004		P6	Parent Refusal of Pneumococcal
	NIP004		P7	Parent Refusal of Polio
	NIP004		P8	Parent Refusal of Td
	NIP004		P9	Parent Refusal of Varicella
	NIP004		P10	Parent Refusal of Smallpox
	NIP004		PALL	Parent Refusal of All Childhood Vaccines
	NIP004		RR1	Religious Exemption of DT
	NIP004		RR2	Religious Exemption of DTaP
	NIP004		RR3	Religious Exemption of HepB
	NIP004		RR4	Religious Exemption of Hib
	NIP004		RR5	Religious Exemption of MMR
	NIP004		RR6	Religious Exemption of Pneumococcal
	NIP004		RR7	Religious Exemption of Polio
	NIP004		RR8	Religious Exemption of Td
	NIP004		RR9	Religious Exemption of Varicella
	NIP004		RR10	Religious Exemption of Smallpox
	NIP004		RALL	Religious Exemption of All Childhood Vaccines
	NIP004		R1	Clinician has decided to repeat the DTaP series
	NIP004		R2	Clinician has decided to repeat the Hep B series
	NIP004		R3	Clinician has decided to repeat the HIB series
	NIP004		R4	Clinician has decided to repeat the Polio series
	NIP004		R5	Clinician has decided to repeat the MMR series
	NIP004		R6	Clinician has decided to repeat the Pneumococcal series
	NIP004		R7	Clinician has decided to repeat the Varicella series
	NIP004		RABEXP	Client has been exposed to rabies
NIP	NIP005	Event Consequence		
	NIP005		D	Patient Died
	NIP005		L	Life threatening illness
	NIP005		E	Required emergency room/doctor visit
	NIP005		H	Required hospitalization
	NIP005		P	Resulted in prolongation of hospitalization
	NIP005		J	Resulted in permanent disability
NIP	NIP006	Patient Registry Status		
	NIP006		A	Active
	NIP006		N	Inactive
	NIP006		P	Permanently inactive
NCIR	NCIR01	Reaction Codes		

Type	Table	Name	Value	Description
	NCIR01		PERTCONT	Pertussis allergic reaction
	NCIR01		TETCONT	Tetanus allergic reaction
	NCIR01		HYPOTON	Hypotonic-hyporesponsive collapse within 48 hours of immunization
	NCIR01		SEIZURE	Seizure occurring within 3 days
	NCIR01		CRYING	Persistent crying lasting >= 3 hours within 48 hours of immunization
	NCIR01		FEVER105	Temperature >= 105 (40.5 C) within 48 hours of immunization
	NCIR01		ERVISIT	Emergency room/doctor visit required
NCIR	VGC	Vaccine Group Code (VGC)		
	VGC		Adeno	Adeno
	VGC		Anthrax	Anthrax
	VGC		BCG	BCG
	VGC		Cholera	Cholera
	VGC		Diphtheria	Diphtheria Antitioxin
	VGC		DTP/aP	Diphtheria, Tetanus, Acellular Pertussis
	VGC		Encephalitis	Encephalitis
	VGC		HepA	Hepatitis A
	VGC		HepB	Hepatitis B
	VGC		Hib	Hib
	VGC		HPV	HPV
	VGC		Influenza	Influenza
	VGC		Lyme	Lyme
	VGC		Measles	Measles Virus Vaccine
	VGC		MMR	Measles, Mumps, Rubella
	VGC		Meningo	Meningitis
	VGC		Mumps	Mumps Virus Vaccine
	VGC		Plague	Plague
	VGC		Pneumococcal Conjugate	Pneumococcal Conjugate 7
	VGC		Pneumo Poly 23	Pneumococcal Polysaccharide 23
	VGC		Polio	Poliomyelitis
	VGC		Rabies	Rabies
	VGC		Rotavirus	Rotavirus
	VGC		Rubella	Rubella Virus Vaccine
	VGC		Tetanus	Tetanus
	VGC		Td	Tetanus Diphtheria
	VGC		Typhoid	Typhoid
	VGC		Smallpox	Vaccinia
	VGC		Varicella	Varicella
	VGC		Yellow Fever	Yellow Fever
	VGC		Zoster	Zoster
NCIR	VTN	Vaccine Trade Name (VTN)		
	VTN		Adeno T4	Adeno T4
	VTN		Adeno T7	Adeno T7
	VTN		Anthrax	Anthrax
	VTN		BCG-BC	BCG-Cancer
	VTN		BCG-TB	BCG-TB
	VTN		Cholera-Inject	Cholera-I
	VTN		Cholera-Oral	Cholera-O
	VTN		Diphtheria	Diphtheria
	VTN		DTaP	Acel-Imune
	VTN		DTaP	Certiva
	VTN		DTaP	Infanrix
	VTN		DTaP	Tripedia

Type	Table	Name	Value	Description
	VTN		DTaP, 5 pertussis antigens	DAPTACEL
	VTN		DTaP/Polio/Hep B	Pediarix
	VTN		DTaP-Hib	TriHIBit
	VTN		DTP	DTP
	VTN		DT-Peds	DT
	VTN		DTP-Hib	Tetramune
	VTN		FLU-Deleted	Flu-Deleted
	VTN		Flu-Nasal	Flu-Mist
	VTN		FLU-split cell	Fluarix
	VTN		FLU-split cell	Fluvirin
	VTN		FLU-split cell	Fluzone
	VTN		Preservative-Free Influenza	Fluzone Preservative Free
	VTN		HepA-Adult	Havrix-Adult
	VTN		HepA-Adult	VAQTA-Adult
	VTN		Hep A-Ped 2 Dose	Havrix-Peds 2 Dose
	VTN		HepA-Ped 2 Dose	VAQTA-Peds 2 Dose
	VTN		HepA-Peds	Havrix-Peds 3 Dose
	VTN		HepA-Peds	VAQTA-Peds 3 Dose
	VTN		HepA-HepB Adult	Twinrix
	VTN		HepB-Adult	Engerix-B Adult
	VTN		HepB-Adult	Recombivax-Adult
	VTN		HepB Dialysis 4 dose	Engerix-B-dialysis
	VTN		HepB Dialysis 3 dose	Recombivax-dialysis
	VTN		HepB-Peds	Engerix-B Peds
	VTN		HepB-Peds	Recombivax-Peds
	VTN		HepB-Hib	Comvax
	VTN		Hib-HbOC	Hib-TITER
	VTN		Hib-OMP	PedvaxHIB
	VTN		Hib-PRP-D	ProHIBit
	VTN		Hib-PRP-T	ActHib
	VTN		Hib-PRP-T	OmniHib
	VTN		HPV, quadrivalent	Gardasil
	VTN		Japanese Enceph	JE-Vax
	VTN		Lyme	LYMErix
	VTN		Measles	Attenuvax
	VTN		Measles	Measles
	VTN		Measles-Rubella	M-R-VAX
	VTN		Measles-Rubella	Measles-Rubella (MERU)
	VTN		Meningococcal conjugate MCV4	Menactra
	VTN		Meningococcal Polysaccharide MPSV4	MENOMUNE
	VTN		MMR	MMR II
	VTN		MMRV	ProQuad
	VTN		Mumps	Mumps
	VTN		Mumps	Mumpsvax
	VTN		Plague	Plague
	VTN		Pneumococcal Conjugate 7	Prevnar
	VTN		Pneumococcal Polysaccharide 23	Pneumovax 23
	VTN		Pneumococcal Polysaccharide 23	PNU-IMUNE 23
	VTN		Polio-Inject	IPOL
	VTN		Polio-Oral	ORIMUNE
	VTN		Rabies-IM	RabAvert

Type	Table	Name	Value	Description
	VTN		Rabies-ID	Imovax Rabies ID
	VTN		Rabies-IM	Imovax Rabies IM
	VTN		Rotavirus, tetravalent	RotaShield
	VTN		Rotavirus, pentavalent	ROTATEQ
	VTN		Rubella	Meruvax II
	VTN		Rubella	Rubella
	VTN		Rubella-Mumps	Biavax II
	VTN		Rubella-Mumps	Mumps-Rubella (MURU)
	VTN		Smallpox	Dryvax
	VTN		Td	Td
	VTN		Td adult preservative free	DECAVAC
	VTN		Tdap	Adacel
	VTN		Tdap	Boostrix
	VTN		Tetanus	TT
	VTN		Typhoid-AKD	Typhoid-AKD
	VTN		Typhoid-HP	Typhoid
	VTN		Typhoid-Oral	Berna/Ty21a
	VTN		Typhoid-ViCPs	Typhim Vi
	VTN		Vaccinia (smallpox), diluted	Vaccinia (smallpox), diluted
	VTN		Varicella	Varivax
	VTN		Yellow Fever	YF-VAX
	VTN		Zoster	Zostavax
NCIR	CPT	Vaccines Administered (CPT Codes)		
	CPT		90476	Adeno T4
	CPT		90477	Adeno T7
	CPT		90581	Anthrax
	CPT		90586	BCG-BC
	CPT		90585	BCG-TB
	CPT		90725	Cholera-I
	CPT		90592	Cholera-O
	CPT		90728	Deleted BCG code
	CPT		90730	Deleted HepA code
	CPT		90745	Deleted HepB
	CPT		90731	Deleted HepB code
	CPT		90737	Deleted Hib code
	CPT		90724	Deleted Influenza code
	CPT		90726	Deleted Rabies
	CPT		90719	Diphtheria
	CPT		90702	DT-Peds
	CPT		90700	DTaP
	CPT		90723	DTaP/Polio/Hep B
	CPT		90721	DTaP-Hib
	CPT		90701	DTP
	CPT		90720	DTP-Hib
	CPT		90659	FLU whole cell
	CPT		90658	FLU split cell
	CPT		90660	FLU-Nasal
	CPT		90632	HepA Adult
	CPT		90633	HepA Ped-2 dose
	CPT		90634	HepA Ped-3 dose
	CPT		90636	HepA-HepB Adult
	CPT		90743	HepB adolescent – 2 dose

Type	Table	Name	Value	Description
	CPT		90746	HepB-Adult
	CPT		90740	HepB-Dialysis 3 dose
	CPT		90747	HepB-Dialysis 4 dose
	CPT		90748	HepB-Hib
	CPT		90744	HepB-Peds
	CPT		90645	Hib-HbOC
	CPT		90647	Hib-OMP
	CPT		90646	Hib-PRP-D
	CPT		90648	Hib-PRP-T
	CPT		90649	HPV, quadrivalent
	CPT		90735	Japanese Enceph
	CPT		90665	Lyme
	CPT		90705	Measles
	CPT		90708	Measles-Rubella
	CPT		90733	Meningococcal polysaccharide MPSV4
	CPT		90734	Meningococcal conjugate MCV4
	CPT		90707	MMR
	CPT		90710	MMRV
	CPT		90704	Mumps
	CPT		90727	Plague
	CPT		90669	Pneumococcal Conjugate 7
	CPT		90732	Pneumococcal Polysaccharide 23
	CPT		90713	Polio IPV
	CPT		90712	Polio oral
	CPT		90655	Preservative-Free Influenza
	CPT		90676	Rabies-ID
	CPT		90675	Rabies-IM
	CPT		90726	Rabies, NOS
	CPT		90680	Rotavirus, tetravalent (if date administered prior to 02/03/2006)
	CPT		90680	Rotavirus, pentavalent (if date administered on or after 02/03/2006)
	CPT		90706	Rubella
	CPT		90709	Rubella-Mumps
	CPT		90718	Td
	CPT		90714	Td – adult preservative free (if date administered on or after 07/012005)
	CPT		90715	Tdap
	CPT		90703	Tetanus
	CPT		90714	Typhoid, Unspecified (if date administered prior to 07/01/2005)
	CPT		90693	Typhoid-AKD
	CPT		90692	Typhoid-HP
	CPT		90690	Typhoid-Oral
	CPT		90691	Typhoid-ViCPs
	CPT		90716	Varicella
	CPT		90717	Yellow Fever
	CPT		90736	Zoster vaccine, live